

### **REMARKS**

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 4-7 and 12-15 are presently active in this case. The present Amendment amends independent Claims 4, 12 and 14 without introducing any new matter or raising new issues; and cancels Claim 16 without prejudice or disclaimer.

The outstanding Office Action objected to Claims 7 and 16 because of informalities. Claims 4-6, 12 and 14-16 were rejected under 35 U.S.C. §103(a) as unpatentable over Nakanishi et al. (U.S. Patent No. 6,728,034, herein "Nakanishi") in view of Morton et al. (U.S. Patent No. 5,999,318, herein "Morton"). Claims 7 and 13 were rejected under 35 U.S.C. §103(a) as unpatentable over Nakanishi, Morton in view of Chen et al. (U.S. Patent No. 5,914,811, herein "Chen").

In response to the objection to Claim 7, Applicants respectfully traverse the rejection, since Claim 7 depends from Claim 5, and not from Claim 6. Therefore, there are no outstanding issues of antecedent basis regarding the expression "a saw-tooth shape." Accordingly, Applicants respectfully request reconsideration of the objection to Claim 7.

In response to the rejection of independent Claim 4 under 35 U.S.C. §103(a), Claim 4 is amended to recite all the features of Applicants' dependent Claim 16. Consequently, Claim 16 is cancelled. In addition, the features of Claim 16 are amended to recite "having a stronger intensity than a peripheral portion of the external light," for clarification, so as to overcome the objection to Claim 16 made by the outstanding Office Action.<sup>1</sup>

In light of the amendments to independent Claim 4, Applicants respectfully request reconsideration of the rejections of Claims 4-7 under 35 U.S.C. §103(a), and traverse the rejections, as discussed next.

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<sup>1</sup> Finds non-limiting support in Applicants' specification as originally filed, for example from page 36, line 20, to page 37, line 9, and in corresponding Figure 1.

Briefly recapitulating, Applicants' Claim 4 relates to a diffraction element and includes, *inter alia*: a substrate with an incoming-side surface opposite to an outgoing-side surface, the incoming-side surface configured to receive light external to the substrate; an incoming-side diffraction grating; a first outgoing-side diffraction grating, a second outgoing-side diffraction grating covered by a reflective layer and having a concave/convex shape in cross-section, the second outgoing-side diffraction grating positioned on a light path of a light diffracted by said incoming-side diffraction grating, wherein a *width of the incoming-side diffraction grating* is configured such that ***only a center portion of the external light***, having a stronger intensity than a peripheral portion of the external light, *is passed through the first incoming side diffraction grating*.

As explained in Applicants' Specification at page 14, lines 10-14 with corresponding Figure 1, Applicants' invention improves upon conventional diffraction elements because it can reduce the effects related changes in propagation direction of the diffracted light when the wavelength of the diffracted light is not constant.

In a non-limiting embodiment explained in Applicants' specification in accordance with the showings of Figure 1, since only a center portion of the external light is passed through the first incoming side diffraction grating, about 85% of the light emitted from the semiconductor laser 107 will exit on the outgoing side of the substrate, while 5% of the light will be detected by the receptor 108 through the incoming-side diffraction grating 102 and the reflective diffraction grating 105.

Turning now to the applied references, Nakanishi describes a diffractive optical element, however Nakanishi fails to teach or suggest a width of the incoming-side diffraction grating is configured such that only a center portion of the external light is passed through the first incoming side diffraction grating. In all the embodiments of Nakanishi, the external light exclusively enters through the diffractive optical element pattern 4. Nakanishi clearly

explains that “second diffractive optical element patterns 9 and 10 are positioned so as to be either directly incident to diffracted light that is produced by the first diffractive optical element pattern 4 or incident to the diffracted light after it has been subjected to total internal reflection by the main surfaces two times.”<sup>2</sup> In all Nakanishi’s Figures 1-2, 6, 7A-7B, 8, 9A-9B, 10, and 12A, it can be seen that the incoming light is focused on the diffractive optical element pattern 4, since Nakanishi teachings are designed for “polarizing beam splitting,” wherein the entire incident light is polarized.<sup>3</sup> Accordingly, Nakanishi fails to teach or suggest a width of the incoming-side diffraction grating is configured such that only a center portion of the external light is passed through the first incoming side diffraction grating, as recited in Applicants’ Claim 4.

The outstanding Office Action rejected the features of dependent Claim 16 by asserting that these features are obvious for one of ordinary skill in the art. Applicants respectfully disagree, since if Nakanishi’s diffractive optical element pattern 4 would be made narrow enough, so that the incident light  $L_0$  would not entirely pass therethrough, Nakanishi’s diffractive optical element would only polarize a small part of the incident light, but Nakanishi is interested in splitting the entire beam into polarized light. There is no evidence that a person of ordinary skill in the art would have been motivated to perform such changes and redesign.<sup>4</sup>

The reference Chen and Morton, used by the outstanding Office Action as secondary references to form a 35 U.S.C. §103(a) rejections, does not remedy the deficiencies of Nakanishi. Chen is concerned with polarizing beam splitters. Accordingly, Chen is also silent on a width of the incoming-side diffraction grating is configured such that only a center

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<sup>2</sup> See Nakanishi at column 10, lines 44-48.

<sup>3</sup> See Nakanishi at column 3, lines 1-3.

<sup>4</sup> See In re Ratti, 270 F.2d 810, 813, 123 USPQ 349, 352 (reversing an obviousness rejection where the “suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate.”)

portion of the external light is passed through the first incoming side diffraction grating, as recited in Applicants' Claim 4. The reference Morton describes an extra manufacturing step to cover a diffraction grating with a reflective layer made of aluminum.<sup>5</sup> However, Morton is also silent on any particular arrangement of diffraction gratings, and fails to teach or suggest the incoming-side diffraction grating is configured such that only a center portion of the external light is passed through the first incoming side diffraction grating, as recited in amended Claim 4.

Therefore, even if *in arguendo* the combination of Nakanishi, Chen and/or Morton is assumed to be proper, the combination fails to teach every element of the claimed invention. Specifically, the combination fails to teach or suggest that the incoming-side diffraction grating is configured such that only a center portion of the external light is passed through the first incoming side diffraction grating, as recited in Applicants' Claim 4. Accordingly, for at least the above stated reasons, Applicants respectfully traverse, and request reconsideration of, this rejection based on these patents.<sup>6</sup>

Independent Claims 12 and 14 recite limitations analogous to the limitations recited in independent Claim 4. Moreover, Claims 12, and 14 have been amended in a manner analogous to the amendment to Claim 1. Accordingly, for the reasons stated above for the patentability of Claim 4, Applicants respectfully submit that the rejections of Claims 12, and 14, and all associated dependent claims, are also believed to be overcome in view of the arguments regarding independent Claim 4.

The present amendment is submitted in accordance with the provisions of 37 C.F.R. §1.116, which after Final Rejection permits entry of amendments placing the claims in better form for consideration on appeal. As the present amendment is believed to overcome

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<sup>5</sup> See Morton in the Abstract, and at column 4, lines 6-11.

<sup>6</sup> See MPEP 2142 stating, as one of the three "basic criteria [that] must be met" in order to establish a *prima facie* case of obviousness, that "the prior art reference (or references when combined) must teach or suggest all the claim limitations," (emphasis added). See also MPEP 2143.03: "All words in a claim must be considered in judging the patentability of that claim against the prior art."

outstanding objections and rejections under 35 U.S.C. §103(a), the present amendment places the application in better form for consideration on appeal. In addition, the present amendment is not believed to raise new issues because the changes to independent Claims 4, 12 and 14 merely recite limitations previously introduced in Claim 16, and cancels Claim 16. It is therefore respectfully requested that 37 C.F.R. §1.116 be liberally construed, and that the present amendment be entered.

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal Allowance. A Notice of Allowance for Claims 4-7 and 12-15 is earnestly solicited.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact Applicants' undersigned representative at the below listed telephone number.

Respectfully submitted,

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